

Finding of Appropriateness of a Refuge Use

Refuge Name: Canaan Valley National Wildlife Refuge

Use: Commercial Forest Management for Habitat Management

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the project leader has consulted with State fish and wildlife agencies. Yes X No

When the project leader finds the use appropriate based on sound professional judgment, the project leader must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate X

Project Leader: _____ Date: _____

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence.

If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Canaan Valley National Wildlife Refuge

Use: Commercial Forest Management for Habitat Management

Narrative

In accordance with the 2006 U.S. Fish and Wildlife Service (Service) Appropriate Use Policy (603 FW 1), the refuge manager must first determine if the use is appropriate prior to allowing any non-priority public use on the refuge. The use of commercial forest management is not identified as a priority public use of the National Wildlife Refuge System (Refuge System) under the Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Pub.L. 105-57). This use is considered a specialized use that is not a wildlife-dependent recreational use (as defined in the Improvement Act).

Commercial forest management is a refuge management economic activity, meaning that it (a) must contribute to the purposes for which the refuge was established or the mission of the Refuge System (50 CFR 29.1) and (b) is a management activity on a national wildlife refuge that results in generation of a commodity which is or can be sold for income or revenue or traded for goods or services (50 CFR 25.12). Forest management allows the refuge to create, improve and maintain the array of vegetation types, successional stages, and structural attributes desired for our forest-dependent trust species. In this way, commercial forest management contributes to multiple objectives in goals 2 and 3 of the Canaan Valley National Wildlife Refuge (refuge) Comprehensive Conservation Plan (CCP), Environmental Assessment (EA) and Habitat Management Plan (HMP), which state that the refuge will provide and promote through active management a diversity of successional forested habitats for the benefit of our focal wildlife species.

Forest management at the refuge is integral to meeting the refuge's wildlife habitat objectives. From a practical standpoint, the optimum means to achieve these objectives is with commercial forest management, subject to management prescriptions prepared and closely overseen by the refuge biologist. Commercial loggers have the capability to treat the acreages desired—and can do so most efficiently and economically. In many cases, commercial logging will attain our desired outcome at no cost to the refuge and may create a small financial gain for the American public.

Well planned and controlled commercial forest management facilitates the management of the refuge's forests and is the preferred method of meeting the habitat needs of forest-dependent birds. The Canada warbler was more prevalent in forested habitat where individual trees were cut to simulate natural tree-throw, in which a tree and its root-wad topple over in major winds, which creates tree gaps (Maurer and Whitmore 1981). Converting edges to early successional habitat would provide additional nesting habitat for priority species of concern such as brown thrasher, eastern towhee, and American woodcock. It would also provide post fledging habitat for forest bird species and important migration foraging and staging areas. Early successional habitat is important as most species, especially migratory birds, associated with this habitat type are declining in the northeast (Sauer et al. 2005, Fink et al. 2006, DeGraaf and Yamasaki 2003).

For these reasons, we have found commercial forest management contributes to the purposes for which the refuge was established and the mission of the Refuge System and, therefore, is an appropriate refuge use under the U.S. Fish and Wildlife Service's policy on the appropriateness of

refuge uses (603 FW 1).

COMPATIBILITY DETERMINATION

USE: Commercial Forest Management for Habitat Management

REFUGE NAME: Canaan Valley National Wildlife Refuge

DATE ESTABLISHED: August 11, 1994

ESTABLISHING AUTHORITY:

The Service has acquired lands for the refuge under the following authorities:

- Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]
- Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901b]
- Migratory Bird Conservation Act of 1929 [16 U.S.C. 715d]

PURPOSE(S) FOR WHICH ESTABLISHED:

The refuge was established to ensure the ecological integrity of Canaan Valley and the continued availability of its wetland, botanical, and wildlife resources to the citizens of West Virginia and the United States (USFWS 1979, 1994). Additional refuge purposes as derived from the legislative authorities are as follows:

- "...for the development, advancement, management, conservation, and protection of fish and wildlife resources..." (Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]);
- "...for the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions." (Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901b]; and,
- "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." (Migratory Bird Conservation Act of 1929 [16 U.S.C. 715d)).

MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:

To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE:

(a) What is the use? Is it a priority public use?

The refuge will use commercial forest management for the primary purpose of creating and/or improving and maintaining wildlife habitat to ensure a diversity of forest structure and composition. Commercial forest management is not a priority public use, but contributes to the refuge's purposes and biological goals by improving habitat for wildlife. Commercial forest management may include a variety of accepted silvicultural practices designed to alter forest conditions and favor the

development of certain desirable forest community types that will benefit individual wildlife species or species groups. Commercial forest management activities may generate forest products of varying economic value. Forest thinning operations and release cuttings yield pole, pulpwood, or firewood; regeneration cuts such as seed tree, selection, or shelterwood cuts yield products ranging from pulpwood to saw timber; and salvage cuts performed as a result of storms, insect, or disease damage could yield any or all of the above mentioned forest products. Carefully planned and supervised commercial forest harvest operations are the preferred method to safely and efficiently manage refuge forests in a cost-effective manner. It is impractical for the Service to acquire the necessary equipment and staff to efficiently or cost-effectively conduct these management actions.

(b) Where would the use be conducted?

The refuge contains forested habitats on most of its existing 13 management units, making forest management possible throughout the refuge. Initial efforts will focus on early successional forest management and forests whose management will offer the greatest benefit to forest-dependent migratory birds. Upland forested areas will also be the focus. Except at the project leader's discretion to meet specific management objectives for wildlife or habitat, no commercial forest management will occur in the following forested wetlands: Canaan fir swamps, floodplain forests and hardwood swamps. The refuge consists of 6,531 acres classified as northern hardwood forest, 215 acres of upland conifer or mixed forest, and 416 acres of forested wetlands that include both conifer and deciduous trees. The Blackwater Research Natural Area (RNA) and Big Cove are the only management units where commercial forest management will not take place due to lack of forest habitats.

(c) When would the use be conducted?

Forest management may occur at any time of the year, depending on individual site characteristics, stand conditions, and other resource concerns. All forest management will occur at times designed to minimize unwanted impacts on resources (e.g. erosion, soil compaction, or the disturbance of wildlife), while maximizing the desired silvicultural results, such as seed germination and natural tree regeneration. A comprehensive forest inventory: evaluating forest habitat and wildlife species of concern, will aid in determining the appropriate timing for forest management where appropriate.

(d) How would the use be conducted?

Forest management activities will be directed by the Habitat Management Plan (HMP). The specific treatment prescriptions are "stepped down" from the HMP into the Annual Habitat Work Plan (AHWP). A comprehensive forest inventory; evaluating forest habitat and wildlife species of concern, will aid in determining which stands on the refuge will benefit from active forest management and will be detailed in the AHWP. This inventory will be completed by refuge staff before commercial forest management takes place.

Where commercial forest management is warranted, those activities are performed by a logger operating under a contract, with provisions to protect sensitive refuge resources. Project specifications are forwarded to local and regional companies for competitive bidding. The appointed refuge staff will issue the selected operator a special use permit and directly supervise the forest management operation. Active harvest operations may include felling trees, bringing them to a landing using skidders, processing the trees, loading logs or wood chips on trucks, and hauling the wood products offsite. Forest management treatments (e.g., trees targeted, spacing, residual tree density, harvest method, etc.) are dictated by a silvicultural prescription developed by the appointed refuge staff and approved by the project leader.

Stands will be managed to diversify forest age class and structure across the refuge to benefit focal wildlife species (Seymour and Hunter Jr. 1992, 2000; Kenefic and Nyland 2000; Keeton 2006; Foster et al. 2010). A variety of commercial and non-commercial timber harvesting may occur as described below. All harvesting will follow best forestry and wildlife management practices (BMPs) recommended by the West Virginia Division of Forestry (WV Division of Forestry 2009). This includes specific protections for wetlands, hydric soils, and streams. More detailed strategies are outlined in the Canaan Valley NWR EA, CCP and HMP (USFWS 1994, 2011, 2017); stands identified for active forest management and detailed silvicultural treatments are outlined in the HMP (USFWS 2017).

Within specific management units, focal species have been identified and will act as drivers for active forest management. Where focal species-specific habitat conditions are missing, and may be created through active forest management, those areas will be prioritized for treatment. Specific species of concern are discussed in great detail in the Canaan Valley NWR CCP and HMP.

Silvicultural treatments will be designed to meet habitat objectives within particular forest types (spruce, northern hardwood, aspen, etc.), while addressing site-specific operational constraints. Active management will help restore forest structure (Kenefic and Nyland 2000; Bryan 2003; Keeton 2006; Raymond et al. 2009; Arseneault et al. 2011) and species composition (Leak 1975, 2003, 2005; Arseneault et al. 2011), and improve a forest's resiliency to environmental stressors like climate change. Monitoring of forest systems and the impacts of forest management strategies will allow modification of management practices as necessary. Climate change or other factors may influence the trajectory of our forest systems in unpredictable ways, and adjustments to objectives and management strategies may occur. Strategies are described below:

Strategies for conifer-dominated habitat types

- Use commercial and non-commercial mechanical treatments, where and when appropriate to improve forest composition and structure. Treatments will favor retention and regeneration of Canaan fir, red spruce and eastern hemlock where and when possible. Composition and structural goals will be driven by focal species habitat requirements.
- Manage this habitat type through accepted silvicultural practices. Methods may include:
 - Single tree or group selection with retention, overstory removal, clearcut, and shelterwood techniques.
 - Treatments timed to optimize the ability of the site to regenerate softwood.
 - The size of each management unit, its silvicultural prescription and rotation age will determine the size of each treatment and the cutting interval.

Strategies for conifer-hardwood (mixed-wood) habitat type

- Use commercial and non-commercial mechanical treatments, where and when appropriate, to improve forest composition and structure. Treatments will favor retention and regeneration of red spruce where and when possible. Composition and structural goals will be driven by focal species habitat requirements.
- Manage this habitat type through accepted silvicultural practices. Methods may include:

On softwood-dominated sites

- Single tree or group selection with retention, overstory removal, clearcut, and shelterwood techniques.

- Treatments timed to optimize the ability of the site to regenerate softwood.
- The size of each management unit, its silvicultural prescription and rotation age will determine the size of each treatment and the cutting interval.
- Emphasis on overstory removal techniques that protect softwood regeneration in areas of advanced softwood regeneration.

On hardwood-dominated sites

- Gap-based management (group selection) with retention, with variable group size.
- Promotion of new cohorts and maintain understory development.
- Promotion of increased compositional and structural heterogeneity, including dense canopies, large-diameter trees, and large-diameter coarse woody debris and snags.

Strategies for the hardwood-dominated habitat types

- Use commercial and non-commercial mechanical treatments, where and when appropriate to improve forest composition and structure. Composition and structural goals will be driven by focal species habitat requirements.
- Manage this habitat type through accepted silvicultural practices. Methods may include:
 - Single tree or group selection with retention, overstory removal, clearcut, and shelterwood techniques.
 - Promotion of new cohorts and maintain understory development.
 - Promotion of increased compositional and structural heterogeneity, including dense canopies, large-diameter trees, and large-diameter coarse woody debris and snags.
 - The size of each management unit, its silvicultural prescription and rotation age will determine the size of each treatment and the cutting interval.

(e) Why is this use being proposed?

The forests of West Virginia have been significantly altered due to past logging practices and other uses. The resulting forest community types present today, their relative numbers, their age, and their distribution across the landscape are very different than what they would be if left to nature. The health and diversity of Canaan Valley's forests have been reduced, making them less resilient to climate change, disease, invasive species, and natural events.

Restoration requires an active, hands-on approach, guided by science-based methods. Forest management in these altered communities requires tree-planting, harvesting timber, and prescribed burns in order to promote new generations of desired native forest communities. More specifically, forest management can improve and accelerate development of historic forest structure and species composition (Seymour, White and deMaynadier 2002; Keeton 2006; Franklin, Mitchell and Palik 2007; North and Keeton 2008; Raymond et al. 2009; Arseneault et al. 2011). In the absence of active management, the development of appropriate wildlife habitat may take longer or fail entirely, depending on site characteristics, prior management history, and natural disturbance frequency. An actively managed forest, where harvests act to mimic natural disturbances that create openings for new generations of trees while retaining some larger, older trees, will maintain the appropriate forest structure and age or size classes' important to focal species into the future, ensuring adequate habitat is always available for species of concern.

The refuge lacks the equipment and personnel to administer a forest management program unaided. Using a commercial contractor to conduct forest management and silvicultural treatments is the only reasonable way to accomplish the needed work efficiently and safely.

AVAILABILITY OF RESOURCES:

The resources necessary to administer this use are available within current and anticipated refuge budgets. The appointed refuge staff will design and oversee the timber management program, in consultation with the project leader. Current staffing plans and budgets account for these tasks.

A portion of funds generated by the sale of forest products on refuge lands will go into the revenue sharing fund. Another portion will fund the forest management program, including additional stand inventories, timber marking, pre-commercial thinning, and related road and trail work. When appropriate, infrastructure maintenance associated with timber sales, such as road maintenance, will be included as a deliverable in sale contracts. This flexibility alleviates additional management costs associated with active forest management.

All harvesting is likely to occur near, or from, the existing road networks. There is no expected road construction costs associated with active forest management on refuge property. Funding will be necessary for road maintenance, including grading, installation and replacement of culverts and other water control structures, etc. The appointed refuge staff will assume contract development and administration, monitoring, and resource database management.

Outside of costs offset by timber sale receipts, required yearly costs to administer an active forest management program on refuge lands is listed below:

<i>Develop prescriptions; circulate prospectuses for bid; sale layout; onsite representative with logger</i> (APPOINTED REFUGE STAFF)	\$6,000 (4 weeks/year)
<i>Review forest management actions; on-site monitoring</i> (APPOINTED REFUGE STAFF)	\$1,500 (1 week/year)
<i>Review proposals, issue special use permits</i> (PROJECT LEADER)	\$1,000 (2 days/year)
<i>Total Annual Cost of Program:</i>	\$12,000

ANTICIPATED IMPACTS OF THE USE:

Commercial forest management to improve wildlife habitat on the refuge could have the following impacts:

Soil Impacts

The construction and maintenance of roads and landings and the operation of heavy equipment may impact soil, causing rutting and erosion (Helfrich, Weigmann and Neves 1998; Wiest 1998; Cullen 2001). To mitigate potential impacts and minimize erosion, timber harvesting and road construction on the refuge will follow the best management practices as recommended by State forestry agency in

West Virginia (WV DOF 2009). Soil disturbance following timber harvest may increase the export of particulate matter and soil nutrients (Bormann et al. 1968, 1974). To reduce the potential for soil impacts, timber harvesting on the refuge will largely occur during winter months, when snow depths and cold temperatures reduce soil compaction and erosion. Special caution will apply in areas with hydric, steep, shallow, or easily erodible soils.

Aquatic Resource Impacts

Forest management operations may have significant impacts on both water quantity and water quality. Data from forested experimental watersheds in the eastern United States indicate that leaching of nutrients after timber harvesting, especially clearcutting, tends to increase (Bormann et al. 1968, 1974), while increases in stream water temperature are highest where revegetation of cutover areas is delayed (Demaynadier and Hunter Jr. 1995; Cullen 2001). These factors may have detrimental effects on stream organisms, including fish, invertebrates, and amphibians (Campbell and Doeg 1989). Poorly planned timber harvests and road construction can alter surface and groundwater hydrology and water storage capability. The effects of multiple harvests in a watershed can accumulate over time.

Maintaining forested buffers near streams and other aquatic resources minimizes impacts on water resources and water quality (WV DOF 2009). Road construction, skid trail planning, harvest operation and stream crossings will, at a minimum, follow the best management practices promulgated by the State's forestry agency to minimize the alteration of hydrology and the impacts of siltation on water quality. Harvesting will use existing forest roads whenever possible; construction of new roads will be kept to a minimum.

Wildlife and Vegetation Impacts

Commercial forest management can have a number of localized and broader impacts on wildlife-related components of forests including: damage to understory vegetation (Scheller and Mladenoff 2002), alteration of microhabitat environments (Demaynadier and Hunter Jr. 1995), changes in the abundance and type of coarse woody debris (Demaynadier and Hunter Jr. 1995; Siitonen 2001), and removal of snags important to wildlife (*e-CFR*). Less downed wood and fewer large-diameter logs are likely to accumulate under a short-rotation (less than 50 years) harvest, whole-tree harvests, and selection cuts than would occur under long rotations or in uncut forests, affecting soil moisture regimes and forest floor amphibians and small mammals (Gore and Patterson III 1986; Demaynadier and Hunter Jr. 1995). Damage to uncut trees from heavy equipment may create entry points for invasion by insects or disease (Nichols, Lemin Jr. and Ostrofsky 1994). Harvesting may also leave the remaining trees more susceptible to wind throw (Ruel 1995), facilitate the spread of invasive plants (Sakai et al. 2001), and disturb wildlife temporarily (Demaynadier and Hunter Jr. 1995; Campbell, Witham and Hunter 2007; Holmes and Pitt 2007).

Mitigation of much of these impacts is possible through careful planning and implementation. Seasonal restrictions on harvesting will minimize disturbance of wildlife and damage to residual trees or understory vegetation. The careful layout of skid trails, the use of mechanical harvesters and forwarders, and the pre-harvest surveys of resources of concern will minimize impacts. Contracts will require contractors to leave an appropriate volume of tops, branches, and other downed wood onsite whenever possible.

Under refuge habitat management strategies, average forest age and size class, along with percent canopy closure will increase over the long term. Prescriptions will generally mimic the natural

disturbance patterns common to the forest type being treated (Seymour and Hunter Jr. 2000; Seymour, White and deMaynadier 2002; Fraver, White and Seymour 2009). However, some species-specific management will require younger age classes be present on the landscape (Lambert and Faccio 2005; Donovan 2006; U.S. Department of the Interior, Fish and Wildlife Service 2011, 2017; Chace, Faccio and Chacko 2009). In higher elevation areas, the component of softwood-species within refuge matrix forest will increase. Habitat connectivity will increase; fragmentation of forested habitats will decrease.

Many declining forest bird species in BCR 28 are reliant upon forest habitat with dense understory development, historically caused by local disturbances. However, excessive deer browse and a lack of forest management have reduced the abundance of this important forest understory structure throughout the BCR (Rich, T.D. et al. 2004). A recent forest inventory documented in 2006 found that these conditions are also prevalent on the Refuge (USFWS 2006). The Canada warbler, a species of conservation concern for BCR 28, is often found in mature forested habitat where tree gaps allow for the development of localized understory shrub and sapling development. In West Virginia, this species was more prevalent in forested habitat where individual trees were cut to simulate natural tree-throw, in which a tree and its root-wad topple over in major winds, which creates tree gaps (Maurer and Whitmore 1981). Forest management to simulate additional tree gaps, will give the understory a chance to grow. This will have a positive impact on many bird species on the refuge.

Visitor Impacts

Commercial forest harvests have the potential to disturb refuge visitors, cause safety issues, or detract from visitors' aesthetic experience. When safety considerations warrant, areas of the refuge undergoing active management will be temporarily closed. Trails will either be closed or shared with logging trucks depending on the availability of feasible alternatives. Because small portions of the refuge's acreage will be actively harvested at any one time, impacts to visitors will be minimal.

PUBLIC REVIEW AND COMMENT:

As part of the planning process for Canaan Valley National Wildlife Refuge, this compatibility determination will undergo public review, including a public comment period of 14 days.

DETERMINATION:

THIS USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS **X**

THIS USE IS NOT COMPATIBLE

(Check One)

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

Logistics:

- All management actions will be in accordance with Service and regional policies and guidelines and with approved forest management prescriptions. Refuge staff will monitor all permitted commercial forest management operations to ensure they are in compliance with Special Use Permit (SUP) conditions.
- A pre-bid meeting will be held by the Refuge Biologist (or designee) and prospective bidders before pre-entry conference with the successful bidder representative. This meeting will provide information on refuge boundaries, information (maps, timber cruise information, and access) concerning the site to be harvested, specifics and any logistic challenges. Prospective bidders will present a sealed bid at the end of the meeting. Successful bidder representative will be selected on highest price for timber by the Refuge Biologist (or designee).
- A pre-entry conference between the Refuge Biologist (or designee) and the successful bidder representative will be required before beginning logging operations to insure understanding of the special use (SUP) permit conditions and thus avoid serious conflicts.
- All logging will be within the refuge boundaries as specified, timeframes for equipment delivery and removal will be identified, and coordinated with the Refuge Biologist or designee.
- The Refuge Project Leader or his/her designee, i.e. Refuge Biologist shall have the authority to stop timber harvesting operations anytime justifiable reasons develop. This includes but is not limited to; harvesting during a period of high fire danger, wet ground conditions or extreme rutting, discovery of an archeological site, removal of unmarked trees, or for any other reason deemed necessary. An equal amount of additional time will be granted to the Permittee to complete the work depending on the circumstances.

Harvesting Operation:

- Only marked trees shall be cut. Each tree will have two marks on them, one on the base and one on the stem to ensure proper removal. Utmost care shall be exercised to protect all other trees and vegetation from damage. Additional trees marked by refuge personnel for roads or loading sites will be paid for at bid price. The penalty for excessive skinning or other damage to residual trees will be assessed at \$5 per inch DBH. Additional damages may be assessed and adjustments will be made (i.e. skidding lengths) based on the severity of the damage.
- Additional marked trees, agreed upon by both parties, removed to prepare loading sites will be paid for at bid prices.
- If requested, satisfactory scale tickets for timber products shall be submitted to the Refuge Biologist (or designee).
- No unmarked trees will be cut. Penalties will be assessed for cutting unmarked trees at \$5.00 per inch of stump diameter up to 22 inches and \$10.00 per inch of stump diameter for 22 inch and larger stumps.
- Trees will be delimbed and topped at the point of felling, unless special conditions are permitted. Contractors will be required to leave tops, branches, and other wood debris onsite.
- Snags, live cavity trees, and large coarse woody debris will be retained, as appropriate, to meet refuge objectives. The creation of snags, live cavity trees, or coarse woody debris, or

the removal of individual trees or groups of trees may occur in any area of the refuge for specific wildlife management or safety purposes at the discretion of the Refuge Biologist.

- Trees and tops cut shall not be left hanging or supported by any other living or dead tree or brush. Any tree that becomes lodged when cut shall be immediately dislodged and felled flush to the ground. All tree tops and other logging debris will be removed from roads, roadside ditches, trails, firebreaks, fields, streams, and drainages immediately after felling.
- When timber sale is adjacent to private land, all logging equipment and personnel will stay on Refuge property. No trees or debris will be felled on private property.
- Ownership of all products remaining on a sale area after 60 days will revert to the Government upon termination of the permit.
- Any forest management on hydric soils or slopes over 30 percent will forbid the use of any heavy equipment.

Roads:

- Vehicles and other equipment will be operated in a safe manner at all times. The speed limit on refuge roads is 25 miles per hour unless posted otherwise.
- The Refuge Biologist (or designee) must approve the location of all loading sites and temporary roads.
- Maintenance of all roads used in the logging operation will be the responsibility of the permittee. These roads must be maintained to pre-harvest condition or to the standards described under these permit conditions. This may include, but is not limited to grading, placing culverts as needed, or placing gravel or rock (check with Refuge Biologist for type before applying) as needed.
- Permittee shall also repair all damages to roads (pre-existing conditions) resulting from operations conducted under this permit.

Equipment and Safety:

- Each bidder will submit with his bid, or have on file in the refuge office, a current statement demonstrating his financial ability, liability insurance, and the ownership or control of necessary equipment to carry out the operation on the basis herein specified. To properly construct and/or maintain roads will require the use of a crawler tractor/dozer and road grader.
- The permittee and his/her employees will be reasonably prudent in preventing and suppressing forest fires. Permittee shall be liable for all fire suppression cost resulting from their operations.
- Equipment and vehicles will be in good working order with no visible leaks or damages while conducting operations on refuge roads or property.
- Clean up of oil, hydraulic fluid and other contaminants as a result of the logging operation is the responsibility of the permittee and should be immediately cleaned up and reported to the Refuge Biologist (or designee).
- Trash (such as hydraulic buckets, waste paper, or oil containers) from each work site will be removed each day. Littering is a Federal violation and will be considered as such.

Cultural and Refuge Resources:

- Should previously unrecorded historic resources, cultural resources or human remains be discovered on Service land, all activities will be halted immediately and the Refuge Project Leader contacted at immediately.

- If, during the course of the harvest activity, the permittee deliberately damages a recorded site, the permittee could be charged with damage to Federal property and will be responsible for the resultant site damage assessment and mitigation.
- Timing of management activities will be conducted to minimize impacts on wildlife (e.g., outside raptor or migratory bird nesting seasons, Indiana and Northern long-eared bat maternity season).
- The forest management program, directed by the Refuge Biologist, will employ forest inventory and monitoring and adaptive management techniques to assess and modify silvicultural prescriptions.

Best Management Practices (BMPs)

- The State of West Virginia recommended best management strategies and buffer distances will be implemented. In some instances, the refuge may exceed state recommendations for specific resource protection objectives. These refuge recommendations will be outlined in the SUP.
- Logging will not be permitted when the ground is wet and subject to severe rutting or severe soil compaction. Severe rutting will be considered beyond 6 inches or more after several trips with logging equipment. The permittee and his employees will do all in their power to prevent rutting and erosion. Permittee will be required to fill any ruts made as a result of his operation in a manner that will not spread invasive species.
- Roads, skid trails, water crossings, and landings will be sited to minimize damage to resources; roads and skid trails will be stabilized after harvesting. Stabilization plans will be outlined in the SUP.
- Roads will be decommissioned immediately after harvesting occurs if they will not be used in the future. This road rehabilitation will be the responsibility of the logger.

JUSTIFICATION:

This use is determined to be compatible, provided the stipulations necessary to ensure its compatibility are implemented. Commercial forest management will facilitate the ability of the refuge to meet its wildlife management objectives, particularly those for forest-dependent migratory birds and threatened and endangered species. The use will not pose significant adverse effects on refuge resources, interfere with public use of the refuge, or cause an undue administrative burden. The forest management program may adapt to ensure its continued compatibility. Commercial forest management will not occur in any areas inhabited by federally threatened or endangered species, except in limited cases where doing so may benefit those species. Commercial forest management, as described in this compatibility determination, significantly contributes to the purposes of Canaan Valley NWR and the mission of the National Wildlife Refuge System.

Signature: Project Leader: _____
(Signature and Date)

Concurrence: Regional Chief: _____
(Signature and Date)

Mandatory 10-year Re-evaluation Date: December 2027

Literature Cited

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